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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/481,988	01/11/00	BRUINSMA P	1941-70

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EXAMINER	
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ART UNIT	**PAPER NUMBER**
1755	8

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.	Applicant(s)
09/481,988	BRUINSMA et al.
Examiner	**Group Art Unit**
Paul Marcantoni	1755

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Peri d for Response

A SHORTENED STATUTORY PERIOD FOR RESPONSE IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a response be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for response specified above is less than thirty (30) days, a response within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for response is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication .
- Failure to respond within the set or extended period for response will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

☑ Responsive to communication(s) filed on 11/16/00.

☑ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle,* 1935 C.D. 1 1; 453 O.G. 213.

Disposition of Claims

☑ Claim(s) 28-35, 37-67 & 69-77 is/are pending in the application.

Of the above claim(s)____ is/are withdrawn from consideration.

☑ Claim(s) 1-27 is/are allowed.

☐ Claim(s) 28-35, 37-67 & 69-77 is/are rejected.

☐ Claim(s)____ is/are objected to.

☐ Claim(s)____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ Th proposed drawing correction, filed on____ is ☐ approved ☐ disapproved.

☐ The drawing(s) filed on____ is/are objected to by the Examiner.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Pri rity under 35 U.S.C. § 119 (a)-(d)

☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 11 9(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number)____.

☐ received in this national stage application from the International Bureau (PCT Rule 1 7.2(a)).

*Certified copies not received:____.

Atta hment(s)

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s).____

☐ Interview Summary, PTO-413

☐ Notice of References Cited, PTO-892

☐ Notice of Informal Patent Application, PTO-152

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Other____

Office Acti n Summary

Improper Presentation of Product Claims in Re-Issue Application

Claims 28-31 remain rejected under 35 U.S.C. 251 as being an improper recapture of claimed subject matter deliberately canceled in the application for the patent upon which the present reissue is based and a reissue applicant's failure to file a divisional application is not considered to be an error causing a patent granted on elected claims to be partially inoperative by reason of claiming less than the applicant had a right to claim. Thus, such error is not correctable by re-issue of the original patent under 35 USC 251. In re Watkinson, 900 F2d 230, 14 USPQ2d 1407 (Fed Cir. 1990); In re Orita, 550 F2d 1277, 1280, 193 USPQ 145, 148 (CCPA 1977). See also In re Mead, 581 F2d 251, 198 USPQ 412 (CCPA 1978). See MPEP 1450-51.

New Rejection under 35 USC 112, First Paragraph (Commensurate in Scope/Enablement:

The applicants specification is objected to and claims 32-35, 37-67, and 69-77 are rejected under the first paragraph of 35 USC 112 as their process of making the mesoporous films would appear limited to silica (does not include all metal oxides), aqueous solvents (no support for organic solvents), and acid catalyst (no support for base catalyst) as the applicants' specification would appear to be enabling only for silica, aqueous solvents, cationic surfactants, acid catalysts, specific heating temperatures, other ranges, etc.. Thus, applicants' new claims are not commensurate in scope with their enabling disclosure. Note that the same can be said for all new matter rejections noted below because applicants' specification is not commensurate in scope with

their enabling disclosure. Applicants only have support for the enabling features specifically recited in their original disclosure.

New Matter

Claims 32-35, 37-67, and 69-77 are rejected under 35 USC 251 and 35 USC 112 first paragraph on the grounds that the specification as originally filed would not appear to provide support for the invention as is now claimed.

The applicants have indicated in their response that no new matter is added and all new claims are supported by their originally filed specification including drawings and originally filed claims. It would appear the applicants are adding the new claims in their re-issue application that closely parallel or resemble those of ***US Patent Number 5,858,457*** to ***Brinker et al.*** possibly for the purposes of provoking an interference. However, after further consideration of the specific location from the specification where applicants derive their support, it is not seen that applicants have support for all of their new claims. Thus, the new matter over applicants' re-issue claims stands over the below mentioned claims.

With respect to claims 32 and 64, applicants newly added claim is quite similar in scope to Brinker et al.'s claim 1. Yet, applicants' explanations regarding XRD peaks (where is the suppport for XRD range of 2 to 6?), as well as some of the initial starting components of soluble source of metal oxide (outside scope of original invention-original Bruinsma patent limited to silica as the sole metal oxide), water, organic solvent, surfactant, acid and base catalyst, etc. represent new matter and is thus not convincing. There is no support for an organic solvent (only

an aqueous solvent), there is only support for an acid catalyst (col.6, line 59-no support for a base catalyst), Further, there would appear no support that the surfactant is a free surfactant. These would appear almost an exact replication of the Brinker et al. patent and the examiner fails to see where applicants derive their support with the specific limitations of their claim 32.

The applicants' claims 33 and 65 are also new matter. The examiner is not convinced that because refractive index was measured that this is necessarily indicative of an optical coating. It is the examiner's position that applicants do not have literal support for *optical coatings* and this is still new matter.

The applicants' claim 34 and 66 are also new matter. However, applicants do not have support for aluminum oxide *alone.*

Claims 38 and 70 are new matter. Applicants have support for a temperature of 450C yet this does not give them support for approximately 400C. It would appear that applicants may have support for "approximately 450C" but it is not seen how applicants believe that 450C is approximately 400C. Thus, it would appear claim 38 is new matter which also closely resembles Brinker et al.'s claim 9.

Claim 53 states "as low as *approximately* 1.16 in reference to refractive index which is new matter. While it is true Bruinsma teaches in column 10, lines 10-12 a refractive index values down to 1.16 there is no usage of "about" or "approximately" claim language which widens the scope of what is supported by the original disclosure. Further, the index of refraction range is limited to silica.

It was determined that the claims 52 through 54 would not appear supported by the original disclosure and still are new matter.There is no literal support for refractive index ranges of "less than approximately 1.25" and "less than 1.16" respectively in claims 52 and 53 nor is their literal support for a range of dielectric constant of less than approximately 3.0. Further, claim 42 does not limit the precursor solution to **silica** which is thus outside the scope of the original disclosure and constitutes new matter.

Claims 55 and 63 are new matter because applicants do not have support for a low k dielectric constant of less than approximately 2.5. The applicants have stated that since they have support for a refractive index of 1.16 that this would indicate a high film porosity correspoinding to a low-k dielectric constant, e.g. of less than 2.5. The examiner holds this to be new matter because the applicants do not have literal support for "less than approximately 2.5". Again, the applicants are still limited to silica as their sole metal oxide for their invention and to claim they have support for "all" metal oxides broadly is new matter not commensurate in scope with the original enabling disclosure of the Bruinsma patent.

Claims 56-57 are new matter. Applicants have no support for "any" type of surfactant as they are now claiming in step (a). Applicants have only support for cationic surfactant and the list in column 7, lines 41-52 and the examples only would appear to refer to cationic surfactants and does not include thus non-ionic surfactants and anionic surfactants. There is no support in the disclosure that any surfactant other than a cationic surfactant may be used in the invention.

There would appear no support that the surfactant is a free surfactant. There is no support for a base catalyst either and this is also new matter. There is support only for an acid catalyst (see col.6, line 59). There is no support for organic solvent but only an aqueous solvent for the applicants' invention and this is also new matter.

Claim 59 is also new matter since there is no support for an organic solvent but only support for an aqueous solvent.

Claims 61-62 is new matter because applicants claim an organic solvent which is new matter not supported by their original disclosure..

New claims 72-77 would also appear to constitute new matter for the same reasons as noted above for reasons such as XRD (x ray diffraction range of 2 theta 2-6 degrees). ***Catalyst*** is new matter since applicants' invention is limited to ***acid*** catalyst. ***Solvent*** is new matter since applicants are limited to an ***aqueous*** solvent by their original disclosure and do not have support for the broader "solvent" which would include any solvent including organic solvents, etc. Both the new claims' limitation to a broader catalyst and solvent are outside the scope of the original disclosure and thus new matter. Further, applicants would appear to have no support for the refractive index values of 1.13 in claim 75 and the dielectric constants of 1.9 and 1.3 respectively for claims 76 and 77. Again, they would appear limited to silica as the sole metal oxide by the original disclosure.

RESPONSE:

The applicants have re-argued that the presentation of product claims in their re-issue is proper including further argument of the case law. The examiner disagrees and refers applicants to the position taken by special programs examiner Douglas McGinty as well as the citations above and in the first office action. The applicants method of recapture of product claims in this manner is clearly impermissible.

The applicants argue that the term "surfactant concentration much less than the critical micelle concentration" is not indefinite. The examiner has reconsidered yet still disagrees. It is still vague and indefinite to say "much less". It is a relative term on its face. Applicants amended their claim to surfactant concentration that exceeds a critical micelle concentration-- It was also stated in the first office action that- and this would be acceptable claim language as long as it does not represent new matter. It would appear this is not acceptable for this reason and applicants may consider changing to --less-- than instead of "much" less than if their is original support and this too is not new matter.

It would appear that based upon the declaration of Dr. Liu that the applicants may have support for a surfactant concentration less than CMC (critical micelle concentration). It is expected that applicants will amend their claim to delete the term "exceed" since this means the concentrations of CMC and surfactant can actually be equal since it is not exceeded and this would not appear to be the case for the instant invention.

The applicants argue that every one of Figures 5, 7, 8, 9, 10, 16, 18, 19, 20, and 21 show peaks characteristic in the claimed 2 to 6 degree theta range. In rebuttal, it is the examiner's position that there is no literal support for the specific 2-6 degree theta XRD range anywhere in the applicants' original written disclosure. Further, how does applicants decide or glean specifically 2 degrees and 6 degrees for the beginning and end of the peaks in the XRD (xray diffraction pattern)? Could the beginning not be 1.6, 1.8 or the end be 5 or 5.8? It is unclear how applicants can specifically take the specific XRD range of 2 to 6 without looking at the Brinker patent (US Patent Number 5,858,457). It simply is not as clear as applicants make it out to be where the start of the peaks are and the end. Note, for example, Figure 1 A shows a peak around 5 and that would not appear to indicate an endpoint of 6 degrees theta XRD. Also, applicants are referred to Figure 5. How can one actually determine from this figure that the XRD pattern for peaks starts at 2 and ends at 6 for either A or B? Thus, the examiner disagrees that applicants have support for this specific range of XRD of 2 to 6 theta degrees for their peaks from their figures.

The applicants argue that they have support for claims to a metal oxide because of the Dr. Berg declaration that silica has been classified under metal oxides in technical literature for over 10 years. Further Dr. Berg states that it would have been reasonable for "one of ordinary skill in the art to assume that the silica precursors described in Bruinsma patent could be substituted by similar metal oxides since this has been done for mesoporous materials prior to 1996. In rebuttal, the examiner respectfully disagrees. First, applicants miss the point of what the examiner was

making in his new matter rejection. The issue presented is not whether silica (or silicon dioxide) is a metal oxide. It is quite clear it is a metal oxide and this is certainly not the point of argument. The issue is whether applicants have support from their original disclosure for "all" or "any" metal oxide in their claims such as claim 32. Applicants do not have support for all metal oxides but merely have support for silicon dioxide or silica and therefore applicants' usage of "metal oxide" in their claims is not well taken and is new matter.

Further, while it is evident that Dr. Berg is an expert in his field of the Chemical Arts, it would appear he is not as familiar with patent procedure or the concept of new matter. Dr. Berg mistakenly believes that it is proper patent procedure to use the standard for new matter determinations that "one of ordinary skill in the art" would have understood he or she could simply substitute other or all other metal oxides, allegedly, into the original disclosure! This is certainly not the proper by any means and is clearly new matter if any "substution" in this manner is done into the original disclosure. It is noted that if this was permissible as the new standard of determining what can be added to an original disclosure and not new matter the litigation of patents would likely increase 1000 fold. The proper standard for new matter used is what did the original disclosure actually teach and specifically state. Specifically, did the applicants anywhere mention the term *metal oxide* in their original disclosure or did they simply use one specific metal oxide throughout their disclosure? Namely, was only one metal oxide utilized by applicants throughout their original disclosure? It is the examiner's position that this was the case and the original disclosure for the Bruinsma patent (US Patent No. 5,922, 299) was limited to only one

metal oxide. Namely, that metal oxide is silica. There is absolutely no support in the applicants original disclosure for other or "all" metal oxides which applicants claim for their invention. This is why the applicants' usage of "metal oxide" is thus new matter.

The applicants next allege that "aqueous" solvents, according to Dr. Berg again, would have been understood to be simply water mixed with one or more other solvents such as alcohol, and he therefore concludes that Brinker's "organic" solvents are simply an organic solvent containing one or more solvents including water, the very same thing as Bruinsma's aqueous solvents. Applicants thus conclude that therefore one of ordinary skill in the art would have understood allegedly that aqueous solvents in the Bruinsma patent are the "same" as the organic solvents in the Brinker patent. The examiner disagrees. Webster's II New Riverside Dictionary defines aqueous as "relating to, like, containing, or dissolved in water. The term aqueous solvent, contrary to Dr. Berg's own definition of this term, can simply refer to water. While it is true that while an aqueous solvent could potentially include other solvents such as organic solvents, it is first worth noting that applicants have absolutely no support for any organic solvent in the "aqueous solvent" of the prior Bruinsma patent. There is simply no organic solvent anywhere in the original Bruinsma patent disclosure. The examiner will immediately withdraw his new matter rejection if applicants simply point out the specific location of any organic solvent in their original disclosure .It is the examiner's position that one of ordinary skill in the art would certainly have understood that "aqueous solvent" has a separate and distinct meaning from an "organic solvent". The applicants' attempts to characterize the term "aqueous solvent" by a meaning new or contrary

to what is the conventional meaning of this term is erroneous and improper. While a term used in the claims may be given a special meaning in the description of the invention, generally no term may be given a meaning repugnant to the *usual meaning* of the term. In re Hill, 161 F2d 367, 73 USPQ 482 (CCPA 1947).

The applicants next argue that Dr. Berg's expert testimony is supportive of the conclusion that such a teaching is not limited to cationic surfactants. In other words, applicnts believe they do have support for both acid and base catalysts. Again, it would appear Dr. Berg seems to not understand the concept of new matter or patent procedure regarding originally disclosed applications. Dr. Berg erroneously applies the wrong standard for new matter noting that "one of ordinary skill in the art" would have "known" on August 26, 1997 that other surfactants such as and including anionic, non-ionic, and amphoteric types can be usefully employed in "substitution" in the originial invention or disclosed process of Bruinsma for forming mesoporous films. In rebuttal, as stated above, this is not the standard for adding subject matter to the original disclosure and applicants are respectfully invited to point out where in the MPEP they derive this new standard (the "obvious to one of ordinary skill in the art to therefore substitute new not previously disclosed surfactants in the original disclosure). This substitution of new surfactants into the original disclosure is not proper and is clearly new matter. Again, in all fairness to applicants, the examiner would withdraw his new matter rejection over these added surfactants or catalysts if applicants point out specfically in their specification where they derive their support for these newly added surfactants or catalysts.

The applicants also note regarding the Berg and Liu declarations that these allegedly are free surfactants in the same sense of the surfactants as the Brinker patent. The examiner disagrees once again since applicants do not have support for the broader range of surfactants disclosed by Brinker and any addition to their disclosure in attempt to do so constitutes new matter.

The applicants again use Dr. Berg regarding the insertion of acid and now base catalysts because one of ordinary skill would have understood to do so. The examiner notes that applicants have only support for acid catalyst and thus the insertion of "base catalyst" is new matter.

The applicants hold the position that since they teach refractive index measurement they thus have support for optical coatings. Applicants argue that refractive index is a property measured by optical coatings to show they have support for "optical coatings". In rebuttal, there was no mention nor any literal support using the word optical in the applicants' original disclosure. The examiner is not convinced that applicants necessarily have support because of one parameter that may be used in the measurement of optical coatings. There is simply no literal support for the terms "optical coating" and thus the examiner maintains his position that this term is new matter.

The applicants argue that they have support for "preparing a precursor sol containing a soluble source of metal oxide wherein said metal oxide is an oxide of silicon, aluminum, and *combinations* thereof. The applicants indicate that Example 5 meets the alumina oxide by product limitations for their claims 34 and 66. Yet, it would appear Example 5 teaches an alumino-silicate precursor versus other examples such as Example 1 in Bruinsma which teach a silica precursor.

Thus, example 5 teaches apparently the combination of TEOS (tethraethyl orthosilicate) and aluminum nitrate to form an aluminosilicate precursor solution which is evidently the combination referred to in applicants' claims. However, applicants would not appear to have support for the limitation of claims 34 and 66 wherein said metal oxide is an oxide of aluminum. Applicants have no support nor any examples showing alumina alone as the soluble source of metal oxide and thus this claim remains new matter. Nevertheless, again applicants bring up Dr. Berg noting that substitution is believed proper since he believes one of ordinary skill in the art would have understood this at the time of the applicants invention. Once again, while this may be a standard used by an examiner in making a 35 USC 103 art rejection (i.e. functional equivalence), this is certainly not the proper standard for incorporation of subject matter into the original disclosure. It is irrelevant whether it may have been functionally equivalent or substitutable at the time of the applicants invention for one of ordinary skill in the art. The question that should be raised is as follows: Did the applicants' original disclosure contain alumina alone as a species which can be used as a soluble source of metal oxide? It would appear the answer is no and thus the addition of alumina alone as a soluble source of metal oxide in claims 34 and 66 is new matter.

The applicants next argue that they do have support for claims 38 and 70 to calcining to approximately 400 degrees C since, according to Dr. Berg again, prior art calcination of surfactant templated materials was over a wide temperature range of 400 to 650C. While this may be so, unfortunately this range is nowhere to be found in the specification and thus no weight is given Dr. Berg's opinion regarding this specific range since it is not in the original disclosure of

the Bruinsma patent. Applicants do teach in their specification calcination temperatures of, for example 450C and 550C. Again however, applicants do not have literal support for the temperature range of "approximately 400C." Note that even if applicants have one data point of 450C as a calcination temperature it is improper to conclude they have support for the range of "approximately 400C."

Claim 40 was originally held in the examiner's first office action to be new matter since applicants now delete a critical step to their method. Namely, that critical step was spin coating which is actually performed in Examples 1 and 10 and would appear required in the process. It was further stated that it would appear that there is no support for a step of not actually using a step of spin coating and only rapid evaporation. After further consideration, the examiner concedes that this holding of new matter was incorrect and the applicants do have support for rapid evaporation and are not limited to spin coating. This new matter rejection is now withdrawn.

The applicants argue that they have support for claim 53 and it is noted that column 10, lines 10-12 of Bruinsma teaches an index of refraction values range from that of ***silica*** down to 1.16. Applicants' claims are not limited to silica (as it properly should be to not qualify as new matter) nor is the range down to 1.16. Applicants actually claim "the method of claim 42 wherein the mesoporous film has a refractive index as low as *approximately* 1.16. Applicants have only support for silica from this index of refraction range and it is noted that claim 42 (from which 52-54 depend) does not require the *precursor solution* to be ***silica***. Applicants broadly claim a

precursor solution and do not limit it to silica in claim 42 and thus it is outside the scope of the original disclosure and new matter.. For this reason, the applicants' refractive index range is new matter outside the scope of the instant invention.

Also, the applicants refer the examiner to Figure 4 regarding refractive index "n" supports numerous claims to refractive indices. Yet, again, applicants claim 42 is not limited to silica (Note also that Figure 4 **is limited to silica)** and thus applicants argue features not claimed since neither dependent claims 52-54 nor independent claim 42 states that **silica** is the precursor solution.

The applicants argue that refractive indexes of less than 1.25 and less than 1.16 are not new matter because of Figure 4. Again, applicants do not limit their precursor solution to silica and thus have no support for refractive indices of any other material other than silica. In addition, it is noted that while Figure 4 does teach ranges that would appear to overlap 1.25 and 1.16, there is no literal support in the applicants' written disclosure for either of these specific ranges.

The applicants then state they are entitled to any refractive index from Figure 4 for values of refractive index less than 1.25 and 1.16 respectively. The examiner disagrees and again notes that applicants do not even limit their claim 42 to which claims 52-54 are dependent upon silica as the sole metal oxide. The metal oxides for supported refractive index are limited to silica which is required by Figure 4 (ie Volume Fraction of **Silica).** Further, the applicants do limit their range in claim 53 for refractive index to as low as approximately 1.16. This would be acceptable based upon the literal support in Bruinsma stated as long as the term "approximately" is removed as and silica is added to claim 42 as already stated above. Also, with respect to claim 52, applicants do

not have support from Figure 4 for even "silica alone" for all values less than 1.25. Where is there support for .01, 1.0, 1.1 values for refractive index? Applicants would appear limited by their smooth curve to silica for their metal oxide in amounts possibly and by estimation of Figure 4 down to about 1.14 at best (this is just an estimate from the graph and not an exact figure).

The applicants conclude that there is a well known relationship between refractive index, porosity and dielectric constant and such known formulas as n= k x k (k squared) and this was brought up after review of the declarations of all the Doctors who contributed a declaration including exhibits. These declarations were all reviewed by the examiner and while the credentials of these experts in the art are impressive as is their knowledge of this art, the applicants do not have support for any other metal oxide other than silica for their originally disclosed invention. Note again that the refractive index ranges claimed by applicants can only be supported by silica as the metal oxide (Refer again to Figure 4 which limits measurement to only silica). Note that Bruinsma's patent teaches a method of making mesoporous **silica** and regardless of how the other properties inter-relate the applicants simply do not have support for the broad range of all materials of all or other metal oxides as is claimed in the Brinker patent for making mesoporous films. The Bruinsma patent is clearly limited to **silica** as the only metal oxide. The examiner's new matter rejection thus stands and the finality of this office action is now proper.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul Marcantoni whose telephone number is (703) 308-1196.

If efforts to reach the examiner are unsuccessful, supervisory primary examiner Mark Bell may be reached at (703) 308-3823. The ***fax*** phone number for Group 1700 is (703) 305-3599.

PAUL MARCANTONI
PRIMARY EXAMINER
GROUP 1100